AMENDMENTS TO THE CLAIMS

1. (**Currently Amended**) A method for forming a two-dimensional ordered array of proteins, comprising:

contacting a population of proteins with a gas-aqueous interface without using a detergent or solubilizing agent;

laterally compressing by planar membrane compression, said population to an appropriate ~~pressure~~ packing density, such that a two-dimensional ordered array of said proteins is formed at said interface, wherein said appropriate packing density is below a critical density point ~~proteins are not solubilized using detergent~~.

2-3. (**Cancelled**).

4. (**Previously Presented**) The method of claim 1, wherein said protein is a membrane protein, a cellular receptor, an orphan receptor, receptor tyrosine kinase, an EPH receptor, an ion channel, a cytokine receptor, an multisubunit immune recognition receptor, a chemokine receptor, a growth factor receptor, or a G-protein coupled receptor.

5. (**Previously Presented**) The method of claim 1, wherein said protein is contacted with said interface in the presence of lipids.

6. (**Previously Presented**) The method of claim 1, further comprising applying said proteins to said interface in proteoliposomes, liposomes, or a cellular membrane.

7. (**Cancelled**).

8. (**Previously Presented**) The method of claim 1, wherein said interface is an air-aqueous interface.

9-62 (**Cancelled**).

63. (**Currently Amended**) A method for forming a two- or three-dimensional ordered array of water insoluble membrane proteins, comprising:

contacting a population of water insoluble membrane proteins with a gas-aqueous interface without using a detergent or solubilizing agent, wherein said population of membrane proteins are applied to said interface in a proteoliposome;

laterally compressing by planar membrane compression, said population to an appropriate ~~pressure~~ packing density, such that a two- or three-dimensional ordered array of said water insoluble membrane proteins is formed at said gas-aqueous interface.

64. (**Currently Amended**) A method for forming a three-dimensional ordered array of water insoluble membrane proteins, comprising:

contacting a population of water insoluble membrane proteins with a gas-aqueous interface without using a detergent or solubilizing agent;

laterally compressing by planar membrane compression, said population to an appropriate ~~pressure~~ packing density, such that a three-dimensional ordered array of said water insoluble membrane proteins is formed at said interface, wherein said appropriate ~~pressure~~ packing density is above a critical density point for the formation of a two-dimensional ordered array of said water insoluble membrane proteins.

65-66. (**Cancelled).**

67. (**Previously Presented**) The method of claim 1, wherein said two-dimensional ordered array is a two-dimensional crystalline array.

68. (**Previously Presented**) The method of claim 64, wherein said three-dimensional ordered array is a three-dimensional crystalline array.

69. (**Currently Amended**) The method of claim 1 [[3]], wherein said protein is a membrane protein, a cellular receptor, an orphan receptor, receptor tyrosine kinase, an EPH receptor, an ion channel, a cytokine receptor, an multisubunit immune recognition receptor, a chemokine receptor, a growth factor receptor, or a G-protein coupled receptor.

70. (**Currently Amended**) The method of claim 64 [[3]], wherein said water insoluble protein is contacted with said interface in the presence of lipids.

71. (**Currently Amended**) The method of claim 64 [[3]], further comprising applying said water insoluble proteins to said interface in proteoliposomes, liposomes, or a cellular membrane.

72-73 (**Cancelled).**

74. (**Currently Amended**) A method for forming a two- or three- dimensional ordered array of water insoluble membrane proteins suitable for use in crystallography to determine said ~~protein's~~ water insoluble membrane proteins' structure, comprising:

contacting a population of water insoluble membrane proteins with a gas-aqueous interface without using a detergent or solubilizing agent;

laterally compressing by planar membrane compression, said population to an appropriate ~~pressure~~ packing density, such that a two- or three- dimensional ordered array of said water insoluble membrane proteins is formed at said interface, wherein the structure of said water insoluble membrane proteins using said two- or three- dimensional ordered array can be determined to a resolution of 5 Å or higher.

75-76. (**Canceled**)

77. (New) The method of claim 74 wherein said ordered array is formed in the absence of a ligand of said water insoluble membrane protein.

78. (New) The method of claim 77 wherein said appropriate packing density is below a critical density point such that a two dimensional ordered array is formed at said interface.

79. (New) The method of claim 77 wherein said appropriate packing density is above a critical density point such that a three dimensional ordered array is formed at said interface.

80. (New) The method of claim 77 further comprising applying said water insoluble proteins to said interface in proteoliposomes.

81. (New) The method of claim 80 wherein said water insoluble membrane proteins in said ordered array maintain orientation in same direction.

82. (New) The method of claim 81 further comprising spreading said lysed proteoliposomes at said interface to form a planar lipid-protein film.

83. (New) The method of claim 82 further comprising achieving an equilibrium pressure between said lipid-protein film and unlysed proteoliposomes.

84. (New) The method of claim 83 wherein said equilibrium pressure is in the range of 20 to 38 mN/m.

85. (New) The method of claim 84 further comprising compressing said lipid-protein film from 40 cm^2 to 11 cm^2.

86. (New) The method of claim 85 further comprising compressing said lipid-protein film at a rate of 500 mm^2/min.

87. (New) The method of claim 86 further comprising compressing said lipid-protein film to a density corresponding to a pressure between 35 to 45 mN/m.

88. (New) The method of claim 74 wherein said ordered array is formed in the presence of a ligand of said water insoluble membrane protein.

89. (New) A method for forming a two- or three- dimensional ordered array of water insoluble membrane proteins suitable for use in crystallography to determine said water insoluble proteins' structure, comprising:

contacting a population of water insoluble membrane proteins with a gas-aqueous interface in proteoliposomes without using a detergent or solubilizing agent;

lysing said proteoliposomes;

spreading said lysed proteoliposomes at said interface to form a planar lipid-protein film;

achieving an equilibrium pressure in the range of 20 to 38 mN/m between said lipid-protein film and unlysed proteoliposomes;

laterally compressing by planar membrane compression, said lipid-protein film from 40 cm^2 to 11 cm^2 to a density corresponding to a pressure between 35 to 45 mN/m, such that a two- or three- dimensional ordered array of said water insoluble membrane proteins is formed at said interface, wherein the structure of said water insoluble membrane proteins using said two- or three- dimensional ordered array can be determined to a resolution of 5 Å or higher.